From: Rochlin, Kevin
Sent: Thursday, February 20, 2014 9:49 AM
To: Barbara Ritchie
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Subject: Comments on the Data Gap Report
Attachments: Comments data gap report.pdf

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See attached file.

Kevin Rochlin

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From:

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OFFICE OF
ENVIRONMENTAL CLEANUP

February 20, 2014

Reply to
Attn. of ECL-111

Ms. Barbara Ritchie
FMC Corporation
1735 Market Street
Philadelphia, Pennsylvania 19103

RE: Unilateral Administrative Order for Remedial Design and Remedial Action
EPA Docket No. CERCLA 10-2013-0116

Remedial Design (RD) Data Gap Report for the FMC Operable Unit (OU), January 2014

Dear Ms. Ritchie:

EPA has reviewed the referenced document. Comments are enclosed.

Sincerely,

Kevin Rochlin,
Project Manager

Enclosure

Remedial Design (RD) Data Gap Report for the FMC Operable Unit (OU), January 2014

I. GENERAL COMMENT

1. As outlined in the October 2013 Data Gap Work Plan (DGWP), this investigation included:

   - Soil boring and trenching to collect data to determine the acceptability of borrow soil from the Western Undeveloped Area (WUA) in terms of geotechnical, hydrological, agronomical, and vegetative properties;
   - Estimation of the volume of available borrow soil that meets required design criteria for construction of the proposed evapotranspiration (ET) and gamma caps;
   - Evaluation of root density at the vegetation trial plot constructed in 1999 to determine if the revegetation approach used in that area could be successfully implemented as a component of the ET and gamma caps; and
   - Video surveying of underground storm drain piping at remediation area A (RA-A) to assess the volume of residual solids to be removed from that piping, and to determine if elemental phosphorus contamination is present.

   Field activities and results of the investigation were detailed in the Data Gap Report. However, little discussion was provided to indicate how the new soil data will affect ET cover and gamma cap designs (i.e., acceptability of the borrow soil for its intended purpose). It is expected that such details will be provided in the draft design documents for this project and will be reviewed at that time. No change is needed on this document.

II. SPECIFIC COMMENTS

Section 1.1, Regulatory Background, page 1-2

1. The last sentence in this section should be revised to include the date on which EPA approved the DGWP. In addition, the October 2013 version of the DGWP should be listed in the references section.

Section 1.4, Document Organization, page 1-2

2. The first sentence in this section should be revised to refer to the Data Gap Report instead of the DGWP.

Table 2-1, Summary of WUA Soil Investigation, pages 2-1 and 2-2

3. The DGWP called for collection of grab samples of silt at one foot intervals to a depth of 10 feet below ground surface (bgs) in each test pit. However, in several of the test pits, gravel was encountered at depths shallower than 10 feet bgs. Accordingly, the sampling depths indicated in Table 2-1 should be revised to indicate the actual extent of grab

sampling conducted (i.e., 4 feet bgs in test pit TP003, 7 feet bgs in test pit TP009, and 6 feet bgs in test pit TP010).

4. Expand the footnote to this table to indicate that the qualifier NC applies to test pits in which gravels were not contacted before the maximum depth of the excavator was reached.

Section 2.1.1, Test Pits, page 2-2

5. This section should be expanded to discuss the observed variability in depth to gravel within the WUA. Gravel was not encountered at all in more than half of the test pits (TP002, TP004, TP005, TP006, TP007, and TP008). Conversely, gravel was encountered at relatively shallow depths (between 4 and 7.5 feet bgs) in three of the pits (TP003, TP009, and TP010). As noted in the test pit logs (page 56 of the electronic file), this area of shallow gravel appears to cut from east to west across the center of the WUA study area. Such detail is important because it will affect the available volume of borrow soil in this location.

6. For consistency with Table 2-1, correct this section to note that test pits were excavated to depths ranging from 4 to 20.5 feet below ground surface (bgs).

Section 2.1.2, Soil Borings, page 2-3

7. As indicated in the DGWP, undisturbed silt samples were to be collected from five soil borings at depths between 2-3 and 6-8 feet below ground surface (bgs). However, Table 2-1 indicates that the only soil sample from boring SB003 was collected from 0-2 feet bgs. A review of the associated boring log in Appendix C shows that silt was encountered only in the uppermost two feet of this boring. Consequently, no undisturbed soil samples could be collected from the pre-determined depths of 2-3 and 6-8 feet bgs. While this deviation from the DGWP appears to be acceptable, an explanation for it should be provided in the text of the Data Gap Report.

8. As shown in Table 2-1, a silt samples from the 12-14 feet bgs interval was collected from boring SB007. The text indicates that this sample was collected to provide geotechnical information on deeper silts at the WUA. It is unclear whether a single sample will adequately represent properties of deeper silt across the WUA. Given the fact that deep silt was found in numerous test pits and borings across the WUA, it is likely that deep silt will be incorporated into the planned ET and gamma caps. Section 4 of the report should compare shallow and deep silt results (as shown on Table 3-1), and clarify whether any significant differences were evident that may impact design or construction of the ET and gamma caps. If significant differences are identified, additional samples should be collected to determine the usability of deeper silt.

9. According to the Table 3.1 of the DGWP, gravel samples were to be collected from the five soil borings at a depth approximately 10 feet beneath the gravel horizon. However, it does not appear that gravel samples were collected from the soil borings for

permeability analysis. In fact, Section 2.1.2 of the report indicates that the only one gravel sample collected during this investigation was taken from test pit TP003, and the associated log in Appendix B (page 46 of the electronic file) suggests that the samples was collected from the top of the gravel horizon (i.e., at 4feet bgs, rather than 14 feet bgs). This deviation from the approved DGWP suggests that inadequate gravel data has been obtained. The text of the report should be revised to: (1) document these deviations in the sampling program; (2) discuss whether the single, shallow gravel sample is representative of gravel across the WUA; and (3) explain why additional gravel samples are not needed to meet RD information needs. If sufficient justification cannot be provided, additional gravel samples are recommended.

10. The first sentence in this section should be corrected to note that the five soil borings advanced during this investigation were numbered SB003 through SB008, with the exception of SB005. No soil boring was conducted in the vicinity of test pit TP005.

Section 2.2.1, Stormwater Sewer Survey Background and Objectives, page 2-3

11. The first paragraph in this section indicates that the selected remedy for RA-A calls for covering the area (and underground storm sewer piping) with a gamma cap. The second paragraph indicates that any segments of the storm sewer pipe that cannot be cleaned within RA-B will be plugged with concrete and covered by an ET cap. Expand this section to identify remedial action objectives (RAOs) for the storm sewer, and confirm that both types of caps will satisfactorily achieve those RAOs.

Section 2.2.2, Video Survey Description, pages 2-4 and 2-5

12. This section summarizes results of the storm sewer video survey which, as shown on Figure 2-2, extended across RA-A, RA-B, and RA-K. Each segment in the figure appears to have been addressed except for the one between Area Inlets 1 and 3. Confirm the status of surveying over this area and modify the Data Gap Report accordingly.

Section 3.1.2, Hydrological Testing, page 3-1

13. According to Table 3.2 of the DGWP, disturbed soil samples from every other test pit were to be sampled for saturated hydraulic conductivity (ASTM D5084) at 85 and 90% of the maximum dry density (MDD) level. Thus, ten samples would undergo conductivity testing. Ten water characteristic curve tests (ASTM D6836) – two tests on every other test pit sample – were also slated for completion. However, Table 3-2 of the report suggests that only five test pit samples were subjected to these analyses. A review of Appendix D indicates that all five of the test pit samples were analyzed at 85% MDD, and that no data are available for conductivity at 90% MDD. These deviations from the work plan should be noted in the text, along with an explanation as to why these changes should not be considered lingering data gaps for the investigation.

Section 3.2, Root Density Testing, pages 3-4 through3-6

14. Appendix F shows that root density testing was performed on depth-specific samples collected from three locations in each of nine grids across the existing vegetable trial plot. Expand Table 3.4 of the report to also show root density results for Grid 16, Location 3; all three locations within Grid 17, and all three locations within Grid 18 (provided on page 178 of the electronic file). In addition, correct the last sentence on page 3-6 to refer to the 6- to 12-inch interval at Grid 8, which was not analyzed because it was compromised during shipping. Finally, describe the incident in which this sample was compromised and detail what was done to ensure that none of the other samples had been similarly affected.

Section 4.1, Geotechnical Recommendations, page 4-1

15. This section should be expanded to discuss results pertaining to the susceptibility of WUA soils to erosion and desiccation cracking, as determined during the data gap investigation. The discussion should also indicate whether the majority of WUA soils are sufficiently nondispersive for purposes of cap construction. Any limitations on use of WUA borrow soil identified as dispersive (i.e., rating a 3 via the Crumb Test) should also be specified.

Section 4.3, Root Density Recommendations, page 4-2

16. Statistical analyses presented in Appendix H indicated depth-specific root density mean values (expressed as grams of dry root material per 100 grams of soil) of:

    - 0.067 grams in the 0-6 inch sampling interval;
    - 0.0337 grams in the 6-12 inch sampling interval; and
    - 0.014 grams in the 12-18 inch sampling interval.

    A statistical evaluation of all 53 soil samples collected from the 0-6 and 6-12 inch intervals yielded a mean root density value of 0.051 grams. As noted in Section 4.3, this value was selected as the design root density value to be used in RD development. However, it is unclear why results from the 12-18 inch sampling interval were not included in this analysis. If root density below the uppermost foot of soil is not considered an important factor for cap design, it is unclear why soil samples were even collected from the deeper intervals for root density analysis. Expand the text to provide justification for these omissions and to explain how use of the selected design value will affect establishment of an adequate vegetative cover layer on the ET and gamma caps.

Section 4.5, Borrow Source Availability, page 4-2

17. This section states that approximately 2.4 million cubic yards of silt are available at the WUA for use in the ET and gamma covers. However, this estimate is unsupported by mathematical calculations or software output. Instead, this estimate was reportedly based on Figure 4-1, an isocontour map showing the depth of silt in the WUA. However, this figure is confusing, with contour lines that are unlabeled and difficult to translate into depths. It is possible that a different visual approach (e.g., using shades of color to

represent silt thickness) would facilitate interpretation of Figure 4-1. Moreover, it does not appear that the figure accounted for soils deemed unusable due to dispersivity or other considerations. Revise the figure to provide for better interpretation, and provide calculations demonstrating how the figure was determined.

Table 4.3, Summary of Stormwater Sewer Piping Video Survey, page 4-3

18. After adding in sediment and other solids present between Area Inlets 1 and 3 (as discussed in Specific Comment 12 above), this table should be identified as a conservative estimate of solids to be removed from the storm sewer in areas RA-A, RA-B, and RA-K. Relatively clear areas noted in Section 2.2.2 of the report (i.e., the first 40 feet in the segment from the east discharge pipe toward Area Inlet 1 and the first 55 feet in the segment from Manhole 1 to Area Inlet 3) do not appear to have been subtracted out of the volume calculations in this table.